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Original Research Article

A clinical study on ectopic pregnancy

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ABSTRACT

Background: Ruptured ectopic pregnancy is a medical emergency; therefore, it is imperative to diagnose the unruptured ectopic pregnancy such that timely intervention will prevent morbidity and mortality Today with availability of monoclonal β-HCG, high resolution transvaginal scan and laparoscopy it is possible to make early diagnosis even before rupture.
Methods: Prospective study of two years duration with sample of 72 cases of suspected ectopic pregnancy observed and treated out of total 20193 pregnant women admitted were included in this study.
Results: The incidence was 0.36%, maximum between the age group of 26-30 years (33.3%). Risk factors were tubectomy (30.56%), D and C (6.94%), PID (5.6%), previous ectopic (1.39%), IUCD (2.78%). The typical triad of amenorrhoea, pain abdomen and bleeding was observed in 54.2% of cases. 19 patients were brought in shock (26.4%). Ultrasonography done in 56 cases.
Conclusions: There is an increase in the incidence of ectopic pregnancy but a decrease in maternal mortality during the past two decades. Although the early diagnostic tools were available, we had to manage most of our patients as surgical emergencies, as they were brought late in the trial, with established diagnosis of ruptured ectopic pregnancy. Physicians should be sensitive to the fact that in the reproductive age group any women presenting with pain in the lower abdomen, diagnosis of ectopic pregnancy should be entertained irrespective of the presence or absence of amenorrhoea, whether or not she has undergone sterilization.

Keywords: Ruptured ectopic pregnancy, Tubectomy, Transvaginal scan

INTRODUCTION

Ectopic pregnancy is a life-threatening condition that every practicing obstetrician and gynecologist encounters in his or her practice.

It greatly endangers the life of the woman and also her future fertility by causing damage to the fallopian tubes and/or ovary. The physician who is ectopic minded rarely fails to make the diagnosis.

The word ectopic is from Greek; 'EX' and 'TOPOS' meaning "out of place". It is defined as any intra or extra uterine gestation in which the fertilized ovum implants at an aberrant site inconducive to growth and development.

An ectopic pregnancy occurs when the developing blastocyst implants either outside the uterus [Fallopian tube: ampullary (79.6%); isthmic (12.3%); fimbrial (6.2%), Ovary (0.15%) and abdominal cavity (1.4%)] or in an abnormal position within the uterus cornual (1.9%), cervical (0.15%).[1] Highest percentage (98.3%) of ectopic pregnancies occur in the fallopian tubes.

Objective of present study was to study the incidence of ectopic pregnancy, to study the clinical presentation of

ectopic pregnancy, to study the risk factors associated with ectopic pregnancy and to study the immediate morbidity and mortality associated with ectopic pregnancy.

METHODS

All diagnosed cases of ectopic pregnancy during two years of study period in our institute were enrolled in the study.

On admission detailed history and clinical evaluation was done.

Detail history of the patient included: Patient identity; Complains like history of amenorrhoea, acute pain abdomen, vaginal bleeding (if present its duration and nature), any attacks of syncope or vomiting, urinary or rectal symptoms, fever or other symptoms like backache or shoulder pain; Detail Menstrual and Obstetric history including history of infertility or previous ectopic pregnancy, if present; History of previous surgery - dilatation and curettage, tubal surgeries – tuboplasty, appendicectomy or any other abdominal surgery; History of pelvic inflammatory disease or tuberculosis and treatment received for it; Family history of tuberculosis; Method of contraception - IUCD, oral contraceptive pill or permanent method

Clinical evaluation included general examination of patient- including presence of anaemia, shock, restlessness, cold and clammy extremities, pulse, respiration, blood pressure, temperature and cardiovascular and respiratory systems; abdominal examination- for presence of mass, signs of free fluid in peritoneal cavity, guarding, rigidity, tenderness and Presence of rare signs like Cullen's sign; Vaginal examination –for presence of bleeding, its nature, colour of the vaginal mucosa, position of the cervix, tenderness on movement of the cervix, size of the uterus, mobility and consistency, presence of mass and/or tenderness in any of the fornices; Per-rectal examination whenever necessary for confirmation of findings.

On admission after a detailed examination, a sample of blood was drawn for Blood grouping, Rh typing and cross-matching to arrange blood for transfusion. Investigations like Hb%, HCT, routine blood tests as advised by anaesthesiologists; TLC, DC, ESR if necessary; urine pregnancy test and ultrasonography were carried out.

In acute cases with the typical symptoms i.e. amenorrhoea, pain and bleeding which was confirmed by USG (wherever possible) followed by laparotomy.

Patients in shock were managed and taken for surgery.

Blood transfusion was given intra-operative or postoperative as per the requirement of individual cases.

In cases with atypical findings (history and examination) simulating other condition like pelvic infection, twisted ovarian cyst or acute appendicitis were hospitalized for observation and taken for laparotomy subsequently.

Laparotomy were performed under either spinal or general anaesthesia. Abdomen was opened with suitable incision. The site of ectopic gestation, status of the fallopian tube, contralateral tube, ovaries and uterus was noted. As majority of the patients had ruptured tubal gestation, a decision for removal of the tube i.e., unilateral salpingectomy was made. Salpingectomy was combined with contralateral tubectomy in patients who did not wish to conceive. In cases with obvious pathological findings on the opposite side, the diseased adnexa were removed.

Prophylactic antibiotics were given to all patients at the time of induction of anaesthesia. Patients were followed up in the post-operative period with special attention to the development of fever, abdominal pain, distension of the abdomen and wound sepsis. Patients were discharged with an advice to come for follow up after a week.

RESULTS

72 cases of suspected ectopic gestation were observed and treated during the study period of two years at our institution. Total no. of pregnant women admitted during the same period were 20193. The incidence of ectopic pregnancy was 0.36%.

Table 1: Incidence of ectopic pregnancy.

Total no. of ectopic	Incidence
72	0.36%

The study group includes maternal age ranged from 18 years to 36 years, the youngest being 18 years and oldest was 36 years. 8 patients were teenagers [6 (19 years) and 2 (18 years)]. The maximum number of ectopic gestation in the present study occurred between the age group 26 to 30 years.

Table 2: Ectopic pregnancy in relation to age.

Age group (years)	No. of cases	Percentage
15-20	12	16.7
21-25	16	22.3
26-30	24	33.3
31-35	14	19.4
36-40	6	8.3
Total	72	100

When previous reproductive performance was reviewed, the maximum incidence of ectopic gestation (33.3%) occurred among the second para. In 23 out of 72 patients (31.9%), ectopic pregnancy was the first conception.

Table 3: Distribution of cases based on parity.

Parity	No. of cases	Percentage
Nulliparous	23	31.9
1	13	18.1
2	24	33.3
3	12	16.7
Total	72	100

Maximum number of cases in present study group belonged to the age group of 26-30 with parity 2, accounting for 11 cases where as 10 cases in the age group 21-25 were nullipara.

There were only 5 cases between the age group 36-40 years.

Table 4: Correlation of the sample by age and parity.

Age	Parity				Total
	Nullipara	1	2	3	
15-20	9 (90%)	0 (0%)	1 (10%)	0 (0%)	10 (100%)
21-25	10 (66.67%)	2 (13.33%)	3 (20%)	0 (0%)	15 (100%)
26-30	2 (7.7%)	5 (19.2%)	11 (42.3%)	8 (30.8%)	26 (100%)
31-35	2 (12.5%)	6 (37.5%)	7 (43.7%)	1 (6.3%)	16 (100%)
36-40	0 (0%)	0 (0%)	2 (40%)	3 (60%)	5 (100%)
Total	23 (31.9%)	13 (18.1%)	24 (33.3%)	12 (16.7%)	72 (100%)

According to Kuppuswamy's classification 41 patients (57%) belonged to low socio-economic status and 31 patients (43%) belonged to medium socio-economic status and none belonged to high socio-economic status.

Table 5: Distribution of the cases by socio-economic status.

Socio-economic status	No. of cases	Percentage
Low	41	57
Medium	31	43
High	0	0
Total	72	100

The study showed that as the interval between pregnancies increases, the incidence of ectopic pregnancy also increases. In this study, when the interval between pregnancies was >5 years, the incidence of ectopic pregnancy was 27.8 %. While in 23 cases (31.9%) it was the first pregnancy.

Table 6: The interval between last pregnancy and ectopic pregnancy.

Interval	No. of cases	Percentage
Nullipara	23	31.9
1-2 years	9	12.5
3-5 years	20	27.8
5+ years	20	27.8
Total	72	100

Of the total 72 cases of ectopic pregnancies, there was no specific risk factor in 38 cases (52.77%), tubectomy in 22 cases (30.56%), PID in 4 cases (5.56%), IUCD in 2 cases (2.78%), D and C in 5 cases (6.94%) and previous ectopic in one case (1.39%).

Table 7: The risk factors in ectopic pregnancy.

Risk factors	No. of cases	Percentage
None	38	52.77
Tubectomy	22	30.56
PID	4	5.56
IUCD	2	2.78
D and C	5	6.94
Previous ectopic	1	1.39

The typical triad of amenorrhoea, pain abdomen and bleeding was observed in 39 (54.2%) cases. Abdominal pain was the most significant symptom in 70 (97.2%) patients. Other symptoms were giddiness, nausea and vomiting, syncopal attacks in 22 (30.6%) cases.

Table 8: Mode of presentation.

Symptoms	No. of cases	Percentage
Amenorrhea	61	84.7
Pain abdomen	70	97.2
Bleeding	45	62.5
Others	22	30.6

Out of 72 patients, 19 (26.4%) cases were admitted in a state of shock. Among these, pallor alone was found to be present in 60 (86.1%) cases.

Table 9: General physical examination.

Symptoms	No. of cases	Percentage
Pallor	60	86.1
Shock	19	26.4
None	9	12.5

Abdominal tenderness was found to be a significant finding in 60 (83.33%) cases. Other symptoms like distension and guarding was seen 13 (18.1%) and 7 (9.7%) of the cases respectively. No abdominal abnormality detected in 2 (2.8%) cases.

Table 10: Abdominal findings.

Abdominal findings	No. of cases	Percentage
Tenderness	60	83.33
Distension	13	18.1
Guarding	7	9.72
Rigidity	1	1.39
Mass	2	2.78
No abnormality	2	2.78

On speculum examination 45 (62.5%) patients had bleeding per vaginum while 27 (37.5%) did not have bleeding.

Table 11: Per speculum examination.

Bleeding	No. of cases	Percentage
Absent	27	37.5
Present	45	62.5
Total	72	100

Majority of the cases had normal uterine size 62 (86%). It was found increased in 10 (14%) cases only.

Table 12: Uterine size.

Uterine size	No. of cases	Percentage
Normal	62	86
Increased	10	14

Painful cervical movement was seen in 47 patients (65.3%). In the rest 25 patients (34.7%) there was no cervical motion tenderness.

Table 13: Cervical motion tenderness.

Cervical tenderness	No. of cases	Percentage
Absent	25	34.7
Present	47	65.3
Total	72	100

Majority 38 cases (52.8%) had forniceal tenderness alone. However, 11 (15.3%) cases had tenderness with mass in the fornix.

Table 14: Forniceal tenderness.

Forniceal tenderness	No. of cases	Percentage
Absent	23	31.9
Tenderness alone	38	52.8
Tenderness with mass	11	15.3
Total	72	100

Urine pregnancy test was a simple test which aided in rightly diagnosing cases of ectopic pregnancy. It was negative in 2 (2.8%) cases while positive in 70 (97.2%) case.

Table 15: Urine pregnancy test.

Urine pregnancy test	No. of cases	Percentage
Positive	70	97.2
Negative	2	2.8

Ultrasonography was done in 56 patients and it was not possible to be done in 16 cases. 28 cases (38.9%) were ruptured and 28 (38.9%) were unruptured in ultrasonography, fluid in POD detected in 38 cases (52.7%).

Table 16: Distribution by ultrasonography.

Ultrasound findings	No. of cases	Percentage
Ruptured	28	38.9
Unruptured	28	38.9
Fluid in POD	38	52.7
USG not done	16	22.2

On surgery, 66 cases were found to be tubal, of which 51 (70.83%) were ampullary and 15 (20.83%) were isthmic. There was one case each of ovarian and secondary abdominal pregnancy and two cases were cornual. On two occasions the site of pathology could not be delineated on surgery. 48 cases had pathology in right side and in 24 cases the pathology was in left side. Thus, ectopic pregnancy occurred more commonly in the right side.

Table 17: Site of ectopic pregnancy.

Site	No. of cases	Percentage
Tubal	66	91.66
Ovary	1	1.39
Cornual	2	2.78
Secondary abdominal pregnancy	1	1.39
Not delineated on surgery	2	2.78

There were 34 cases (47.2%) of ruptured ectopic on surgery. Out of which 31 were tubal rupture, 2 were cornual rupture and 1 ovarian ectopic pregnancy rupture. 20 cases (27.8%) were unruptured and 17 cases (23.6%) presented as tubal abortion. There was one case of secondary abdominal pregnancy.

Table 18: Condition on laparotomy.

Condition	No. of cases	%
Ruptured	34	47.2
Unruptured	20	27.8
Tubal abortion	17	23.6
Secondary abdominal pregnancy	1	1.4

Out of the 63 cases who went laparotomy 20 cases underwent right salpingectomy. 12 cases underwent right salpingo-oophorectomy and 11 cases underwent left salpingo-oophorectomy.

Other procedures performed were left salpingectomy (7 cases), right partial salpingectomy (5 cases), right salpingo-oophorectomy with left salpingectomy (4 cases), bilateral salpingectomy (3 cases) and one case underwent laparotomy for secondary abdominal pregnancy.

Table 19: Laparotomy procedure done.

Laparotomy procedure	No. of cases	%
RSE (Right salpingectomy)	20	27.8
RSO (Right salpingo-oophorectomy)	12	16.7
LSO (Left salpingo oophorectomy)	11	15.3
LSE (Left salpingectomy)	7	9.7
RPSE (Right partial salpingectomy)	5	6.9
RSO+LSE (right salpingo-oophorectomy +left salpingectomy)	4	5.6
BSE (Bilateral salpingectomy)	3	4.2
Laparotomy for secondary abdominal pregnancy	1	1.4
Total	63	87.6

9 cases were managed by laparoscopy. The most common laparoscopic procedure performed was laparoscopic left partial salpingectomy in 3 cases, followed by laparoscopic right salpingo-oophorectomy (2 cases), laparoscopic left salpingostomy (2 cases), laparoscopic left salpingectomy (one case) and laparoscopic right salpingectomy in one case.

Table 20: Laparoscopic procedure done.

Laparoscopic procedure	No. of cases	%
Lap LPSE (Laparoscopic Left partial Salpingectomy)	3	4.2
Lap RSO (Laparoscopic Right Salpingo-oophorectomy)	2	2.7
Lap LSOS (Laparoscopic Left Salpingostomy)	2	2.7
Lap LSE (Laparoscopic Left Salpingectomy)	1	1.4
Lap RSE (Laparoscopic Right Salpingectomy)	1	1.4
Total	9	12.4

Only 14 cases brought histo-pathology reports and all 14 (19.44%) showed evidence of ectopic tissue. It was not done in 58 (80.56%) cases.

Table 21: Histopathology study.

HPS study	No. of cases	Percentage
Sent and positive for ectopic tissue	14	19.44
Not done	58	80.56
Total	72	100

Blood transfusion was given in 49 (68%) cases. While 23 (32%) cases need no transfusion. Patients who were brought in shock were managed with both blood transfusion as well as plasma expanders.

Table 22: Blood transfusion.

Blood transfusion	No. of cases	Percentage
Done	49	68
Not done	23	32
Total	72	100

DISCUSSION

Ectopic pregnancy may occur at any age from menarche to menopause. A study by Rose et al found maximum cases in age group of 21-30 years (43%) which corroborated with the present study (55.6%).[2]

In the present study, the maximum incidence of ectopic occurred between, parity 0 and 3. In the study by Rose et al, as parity increases there is a decrease in the incidence of ectopic pregnancy.[2] Munro Kerr and Eastman are of the opinion that there is no specific relation between parity and ectopic According to ICMR Multicentric Case Control Study (1990) of ectopic pregnancy, majority of women were young and had low parity.[3]

PID is an important factor predisposing to the development of ectopic pregnancy. PID following gonococcal, chlamydial and other bacterial infection cause 3.3-6 fold increased risk of ectopic pregnancy. Levin et al demonstrate the risk of ectopic pregnancy is increased in women with history of PID.[4] In the present study, only 4 patients had a history of PID which contributes to 5.6%. Relative risk based upon ICMR Multicentric Case Control Study was 6.4. Other studies by Marchbanks et al, Savitha Devi et al and Rose et al the incidence of PID as a risk factor is 4, 25 and 34.4% respectively.[2,3,5,6]

Many cases of chlamydia salpingitis are indolent may go unrecognized causing tubal damage and subsequent tubal pregnancy. A strong association between Chlamydia infection and tubal pregnancy was found by Brunham et al.[7] So a recent change in sex life can cause pelvic inflammation and tubal damage in younger age groups causing more incidence of ectopic pregnancy in young, nulliparous or low parity women. In present study nullipara constitute 31.9% ectopic pregnancy.

In present study Patients who had abortion and underwent D and C within the past two years was constituted 6.94%. Rose et al reported previous abortion as a risk factor in 25.8%.[2] Tubal dysfunction or damage following abortion induced or otherwise appears to be a chief factor in these cases.

In the present series 1 (1.39%) case had been operated for previous ectopic gestation, which is in concurrence with the study of Rose et al who reported 3.2% of repeat ectopic pregnancy.[2] Since tubal disease is nearly always bilateral there is a strong tendency for ectopic pregnancy to occur first on one side and then at a later date on the other.

In this study, 30.55% (22 cases) had previous tubectomy. According to McCousland et al electrocoagulation for female sterilisation causes more tubal pregnancies.[8]

In the present series IUCD was used by only two patients (2.8%). Marchbanks et al quotes 1.6% incidence of ectopic pregnancy in patients who were on progestin-only contraceptive.[9] An incidence of 11.9%, 7.69% and 33% ectopc pregnancy were quoted in relation to the use of intrauterine devices by Marchbanks et al, Savitha Devi et al and Wills and Mohanambal respectively.[6,9]

No specific sign or symptom can be said to be pathognomonic of ectopic gestation. The classical history of amenorrhoea, pain abdomen and vaginal bleeding was present only in 54.2% cases in the present study. Presence of shock was seen only in 19 cases (13.9%). The clinical picture is dependent on several factors mostly the extent of time taken for disturbance to occur in ectopic gestation. The more extensive and rapid the disturbance, the clearer is the clinical picture. Hence, undisturbed ectopic gestation is likely to be missed in majority of the cases as the clinical features are vague.

Acute lower abdominal pain was the most common presenting feature in 97.2% of the cases. It was present in 51.5% of cases of tubal rupture in the present series. No history of pain abdomen was seen in 2 cases (2.8%), may be due to undisturbed nature of tubal pregnancy or due to individual differences in the pain threshold. Pendse et al in 3.6% of his cases noted absence of pain.[10]

Amenorrhoea was present in 84.7% cases, incidence is comparable to Rose et al[2] and Pendse et al.[10] Oumachigui et al reported absence of amenorrhoea in 23% cases as against 15.3% in the present series.[11]

Vaginal bleeding was present in 62.5% comparable to 65.4% and 66.6% in study by Rose et al and Pendse et al respectively.[2,10] Other symptoms were giddiness, nausea, vomiting and syncopal attacks. Oumachigui et al reported shoulder pain in 8%, fainting attacks in 18%, vomiting in 31% and urinary symptoms in 12.5%.[11]

On general examination, pallor was seen in 86.1% of cases similar to other studies by Rose et al and Pendse et al having incidence 0f 70.9% and 84.5% respectively.[2,10]

Abdominal tenderness was present in 83.3% cases in the present study and Rose et al also reported similar percentage (83.9%).[2] Pendse et al reported guarding in 5.4% cases and in the present study it was 9.7%.[10]

The classical sign of cervical motion tenderness was present in 65.3% patients. Rose et al reported it to be 55.9%.[2]

Ultrsonography reported 38.9% of them as ruptured, 38.9%unruptured and in 16 cases (22.2%) ultrasonography was not done and taken up for surgery based on clinical findings.

Most of our patients were referred from outside with diagnosis of ruptured ectopic pregnancy. So, our treatment modality was surgical.

43.05% cases of fallopian tubes were ruptured. Total 34 cases (47.2%) were ruptured (including 2 cornual and one ovarian pregnancy). Wills and Mohanambal reported ruptured cases to be 66%. Unruptured cases accounted for 27.8% in our present study and according to Wills and Mohanambal was 34%. Tubal abortion was entered as a different entity in the present study accounting for 17 (23.6%) cases.

Ampullary pregnancy on surgery was found in 70.8% cases. Khera et al and Devi S et al reported it to be 71.7% and 61.53% respectively.[6,12] Pregnancy in Isthmus region was found in 20.8% cases and Khera et al reported it to be 20.75%.[12] Interstitial/cornual and ovarian pregnancy accounted for 2.78% and 1.39% respectively in the present study while it was 3% and 1% by the study by Wills and Mohanambal.

Out of the 72 patients 63 patients underwent open laparotomy out of which majority (27.8%) underwent right salpingectomy and 16.7% and 15.3% right and left salpingo-oophorectomy respectively. 9 patients underwent laporoscopic procedure of which 2.7% had laparoscopic salpingostomy and 2.7% underwent laparoscopic right salpingo-oophorectomy and 4.2% underwent laparoscopic left partial salpingectomy. On surgery 48 cases had pathology in right side and in 24 cases the pathology was in left side. Thus, ectopic pregnancy occurred more commonly in the right side. There was mortality in 3 patients. Blood transfusion was given for 49 patients either intra operatively and/or post operatively taken into account.

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